Report #4

MONTHLY PROGRESS REPORT

Development of Explosives and Initiators for Special Operations (U)

by

Theodore B. Johnson

July 1 - July 20, 1963

Contract No. DA-19-020-AMC-0115(A)
OMS Code: 5561,12.46810.03
PA Control: PA-AG 63-27

Remington Arms Company, Inc.
Bridgeport, Conn.

for

Picatinny Arsenal
Dover, New Jersey

Copy No. 7

DEVELOPMENT OF EXPLOSIVES AND INITIATORS FOR SPECIAL WARFARE OPERATIONS

Due to a Plant shutdown for the two weeks ending August 4 and August 11, 1963, this Report, No. 4, is being submitted early and covers only the first three weeks of July.

Work during this report period has been concentrated on testing and improving the improvised fuses described last month. The results obtained with the third picrate fuse described in Report No. 3 have been confirmed. This fuse, prepared by forming the picric acid-litharge initiating explosive in the presence of string impregnated with liquid glue, burns uniformly at the previously reported rate of about 2/3 inch per second. It was noted in these follow up tests that it is important to allow sufficient time for the fuse to dry. The two days air dry reported last month is sufficient at relatively low humidity, but longer periods will be necessary at high humidity.

Samples of the picrate fuse have been tested in the improvised picrate cartridge case detonator, described in Report No. 2. In these tests 2 grams of the optimum picric acid-litharge initiator (Report No. 2) were pressed lightly in a fired 7.62mm cartridge case, a twenty inch length of the picrate fuse was inserted through the case mouth into the initiator and the mouth was sealed with beeswax. The initiator detonated sharply 30 seconds after the fuse was lit, giving fragmentation equivalent to that obtained in previous tests in which ignition was provided by a commercial electric squib instead of the improvised fuse. A second test performed one week later gave comparable results. Extension of these tests to the initiation of a 50 gram picric acid booster will be carried out as soon as the preparation of an additional dry sample of the picrate initiator is concluded.

Additional preparations of silver oxalate were carried out by mixing solutions of oxalic acid and silver nitrate, decanting and/or filtering and air drying. Solution concentrations did not appear to be critical. A slurry was made by wetting the silver oxalate with a 50% solution of ammonium nitrate. A fuse made by impregnating a string with this slurry burned slowly and consistantly when thoroughly dried but was quite sensitive to moisture pickup at high humidities, making the fuse undependable under these conditions. Since silver oxalate does not appear to undergo a controllable deflagration, a fuse could not be made by impregnating string with this material alone. However, silver oxalate does detonate sharply with relatively little confinement and tests as the initiator in the improvised cartridge case detonator are planned.

The number of man hours worked in July was not available at the time this report was written. It will be reported next month.

DISTRIBUTION

	Monthly Progress Report
Commanding Officer Picatinny Arsenal ATTN: Purchasing Office Dover, New Jersey	4
Armed Forces Technical Info. Agency Arlington Hall Station Arlington, Virginia	10
Commanding Officer Diamond Fuze Labs Connecticut Ave & Van Ness Street, N.W. Washington 25, D.C.	1
Commanding General U.S. Army Munitions Command Dover, New Jersey	1
Commanding Officer Special Warfare Combat Dev. Agency Fort Bragg, North Carolina	1
Commanding Officer Special Doctrine & Equipment Group Fort Belovir, Virginia	1
Commanding Officer Picatinny Arsenal ATTN: SMUPA-DR4 Dover, New Jersey	2
Commanding General U.S. Army Materiel Command ATTN: AMCOR Washington 25, D.C.	1
Commanding Officer Frankford Arsenal Philadelphia, Pennsylvania	1
Commanding Officer Boston Procurement District Army Base, Boston 10, Mass. ATTN: AMXBO-LD	1

UNCLASSIFIED